

**Claims:**

1. Process for ethylene recovery in a cycle gas process for preparing vinyl acetate by means of
  - a) heterogeneously catalysed reaction of ethylene, acetic acid and oxygen at a pressure of from 1 to 50 bar and a temperature of from 50°C to 200°C,
  - b) separation of the product gas stream comprising substantially ethylene, vinyl acetate, acetic acid, water, carbon dioxide and further inert gases, and
  - c) recycling of ethylene into the cycle gas process, characterized in that
  - d) the product gas stream is fed at system pressure to a cycle gas scrubber charged with acetic acid, and vinyl acetate is removed from the cycle gas, and
  - e) the vinyl acetate-free cycle gas is subsequently fed to a CO<sub>2</sub> absorption to remove carbon dioxide, and then
  - f) a portion of the ethylenic cycle gas stream is recycled into the reaction system, and the remainder of the ethylenic gas stream is discharged and reused in processes for recovering or converting ethylene.
2. Process according to Claim 1, characterized in that from 1 to 25% by volume of the ethylenic gas stream is discharged.
3. Process according to Claim 1 or 2, characterized in that the discharged proportion of the ethylenic gas stream is reused in oxidation processes for preparing ethylene oxide and ethylene glycol, acetaldehyde and for preparing acetic acid, in the oxychlorination of ethylene for the preparation of dichloroethane, or in the direct chlorination of ethylene to dichloroethane.
4. Process according to Claim 1 or 2, characterized in that the discharged proportion of the ethylenic gas stream is reused in processes for alkylating benzene to ethylbenzene, for carbonylation to acrylic acid, for polymeriza-

tion, in the hydroformylation to propionaldehyde, in the Reppe carbonylation to propionic acid, or in the Alfol process for preparing long-chain primary alcohols.

- 5     5. Process according to Claim 1 or 2, characterized in that the ethylene from the discharged proportion of the ethylene gas stream is recovered in processes for refining hydrocarbons.